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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/936,049	09/07/2001	Alistair J Poustie	36-1472	7818

7590 06/16/2004

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EXAMINER	
LEUNG, CHRISTINA Y	
ART UNIT	PAPER NUMBER
2633	

DATE MAILED: 06/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/936,049	POUSTIE, ALISTAIR J	
	Examiner	Art Unit	
	Christina Y. Leung	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 September 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6 and 8* is/are rejected.

7)☒ Claim(s) *1-8* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *01/03/02*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 1-6 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 3, and 6 of U.S. Patent No. 6,735,396 B2 in view of Onaka et al. (US 5,886,804 A).

The limitations and steps of claims 1-4 of the instant application are similarly recited in claim 1 of US 6,735,396 B2. Claim 1 of the instant application and claim 1 of the patent each recite a method including generating a chirped optical pulse, applying the chirped pulse to an

input of an optical AND gate, and applying an optical data pulse to a second input of the AND gate, in order to produce an output of the AND gate having a wavelength determined by the amount of jitter experienced by the data pulse. Claim 3 of the instant application is differently worded from claim 1 but recites a similar method including those steps.

Claim 2 of the instant application further recites "wherein the chirped optical pulse is one of a stream of pulses, and wherein the data pulse is one of a clocked stream of data pulses, the stream of chirped pulses being synchronized with the clock of the data pulse stream," as similarly recited at the end of claim 1 of US 6,735,396 B2. Claim 4 recites "wherein said chirped pulses have a duration T, and said wavelength of said chirped pulses varies in a predetermined monotonic manner over said duration T of said chirped pulses," as also similarly recited in claim 1 of the patent.

Claim 5 of the instant application recites limitations that correspond to those in claim 3 of US 6,735,396 B2.

Claim 6 of the instant applicant recites a device similar to the device recited in claim 6 of US 6,735,396 B2, including an optical AND gate having two inputs, wherein the first input of the AND gate is connected to chirped pulses and the second input is connected to optical trigger pulses, and wherein the output of the AND gate produces an output pulse whose wavelength is determined by the amount of jitter in the optical trigger pulse.

Claims 1-6 of the instant application mainly differs from claims 1, 3, and 6 of the patent in that claims 1-6 further include passing the output pulses through an optically dispersive medium. However, it is well known in the art that optical signals traveling on an optical fiber may experience chromatic dispersion, causing the signals to shift from their original

wavelengths, as Onaka et al. particularly teach (column 1, lines 38-49). Onaka et al. further teach that it is well known in the art that such distorted signals may pass through an optically dispersive medium in order to compensate for the dispersion (column 1, lines 50-59).

It would have been obvious to a person of ordinary skill in the art to further include of passing the output signal through a dispersive medium as taught by Onaka et al. in the method/device recited in claims 1, 3, or 6 of US 6,735,396 B2 to ensure that the wavelength of the output pulse is preserved prior to detection.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claim 8 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd.* v. *Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 3 and 6-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 3 recites the limitation "the respective optical trigger pulse" in lines 4-5 of the claim. There is insufficient antecedent basis for this limitation in the claim, since the claim does not previously specifically recite an "optical trigger pulse." Based on Applicant's specification, Examiner respectfully suggests that claim may be amended in lines 2-3 of the claim to read "using the optical pulses *as optical trigger pulses* to trigger an optical AND gate..." so that the meaning of "trigger pulse" is made clear.

Similarly, claim 6 recites "the optical trigger pulse" in lines 7-8 of the claim. There is insufficient antecedent basis for this limitation in the claim, since the claim does not previously specifically recite an "optical trigger pulse." Claim 7 depends on claim 6 and is rejected under 35 U.S.C. 112 for the same reason. Based on Applicant's specification, Examiner respectfully suggests that claim 6 may be amended in lines 4-5 of the claim to read "when one of said optical pulses is received at the second input *as an optical trigger pulse*..."so that the meaning of "trigger pulse" is made clear.

Claim 8 provides for the use of a device to correct for jitter suffered by optical pulses, but since the claim does not set forth any steps involved in the method/process, it is unclear what method/process Applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1, 3, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miura et al. ("Timing jitter measurement method for a kHz regenerative amplifier system." Lasers and Electro-Optics, 1999. CLEO/Pacific Rim '99. 30 Aug.-03 Sept. 1999, pp. 413-414) in view of Onaka et al. (US 5,886,804 A).

Regarding claim 1, Miura et al. disclose a method of correcting the amount of timing jitter experienced by an optical data pulse in an optical transmission system (Figure 1; see also page 414, paragraphs 1 and 2 in particular), the method comprising:

generating a chirped optical pulse containing a spread of wavelengths (shown in Figure 1 as "Signal Pulse (Chirped)"; see page 414, line 2);

applying the chirped pulse to one input of an optical AND gate in synchronism with the unjittered arrival time of the data pulse (shown in Figure 1 as "Gate Pulse"; Figure 1 shows a crystal that serves to provide the optical AND of two pulses); and

applying the optical data pulse to a second input of the optical AND gate to trigger the AND gate and to produce at the output of the AND gate an output optical pulse (referred to in the text as an "upconverted light") having a wavelength determined by the amount of jitter experienced by the data pulse with respect to the unjittered arrival time;

Miura et al. disclose that "the arrival time and its fluctuations" (i.e., jitter) of the pulses "can be obtained by measuring a spectrum of upconverted light" (i.e., by measuring the wavelength of the output light) and therefore disclose that the wavelength of the output optical pulse is determined by the amount of jitter experienced by the input data pulse.

Regarding claim 3, as well as it may be understood with respect to 35 U.S.C. 112 discussed above, Miura et al. disclose a method of correcting for timing jitter of optical pulses in

an optical transmission system, (Figure 1; see also page 414, paragraphs 1 and 2 in particular) which method includes

using the optical pulses to trigger an optical AND gate (shown in Figure 1 as "Gate Pulse"; Figure 1 shows a crystal that serves to provide the optical AND of two pulses), which also receives chirped optical pulses (shown in Figure 1 as "Signal Pulse (Chirped)"; see page 414, line 2), to produce output optical pulses (referred to in the text as an "upconverted light") having a wavelength determined by the amount of jitter in the respective optical trigger pulse.

Again, Miura et al. disclose that "the arrival time and its fluctuations" (i.e., jitter) of the pulses "can be obtained by measuring a spectrum of upconverted light" (i.e., by measuring the wavelength of the output light) and therefore disclose that the wavelength of the output optical pulse is determined by the amount of jitter experienced by the input data pulse.

Regarding both claims 1 and 3, Miura et al. does not specifically disclose thereafter passing the optical output pulse through a suitable optically dispersive medium. However, it is well known in the art that optical signals traveling on an optical fiber may experience chromatic dispersion, causing the signals to shift from their original wavelengths, as Onaka et al. particularly teach (column 1, lines 38-49). Onaka et al. further teach that it is well known in the art that such distorted signals may pass through an optically dispersive medium in order to compensate for the dispersion (column 1, lines 50-59).

It would have been obvious to a person of ordinary skill in the art to further include a step of passing the output signal through a dispersive medium as taught by Onaka et al. in the method disclosed by Miura et al. to ensure that the wavelength of the output pulse is preserved prior to detection. One in the art would have been particularly motivated to further include such

dispersion compensation since Miura et al. already disclose that a jitter measurement is obtained from the particular wavelength of the output pulse, and therefore, the accuracy of the jitter measurement would depend on the output pulse maintaining the same wavelength until it is properly detected.

Regarding claim 6, as well as it may be understood with respect to 35 U.S.C. 112 and as similarly discussed above with respect to claims 1 and 3, Miura et al. disclose a device for correcting the timing jitter of optical pulses in an optical transmission system (Figure 1; see also page 414, paragraphs 1 and 2 in particular), the device including

an optical AND gate having an output and first and second inputs (Figure 1 shows a crystal that serves to provide the optical AND of two pulses), the first input of the AND gate being connected to a source of chirped optical pulses ("Signal Pulse (Chirped)"), wherein when one of the optical pulses is received at the second input ("Gate Pulse") while one of the chirped pulses is present at the first input, the AND gate is triggered to produce an output optical pulse ("upconverted light") whose wavelength is determined by the amount of jitter in the optical trigger pulse.

Again, Miura et al. disclose that "the arrival time and its fluctuations" (i.e., jitter) of the pulses "can be obtained by measuring a spectrum of upconverted light" (i.e., by measuring the wavelength of the output light) and therefore disclose that the wavelength of the output optical pulse is determined by the amount of jitter experienced by the input data pulse.

Again, Miura et al. does not specifically disclose that the device further includes an optically dispersive medium. However, it is well known in the art that optical signals traveling on an optical fiber may experience chromatic dispersion, causing the signals to shift from their

original wavelengths, as Onaka et al. particularly teach (column 1, lines 38-49). Onaka et al. further teach that it is well known in the art that such distorted signals may pass through an optically dispersive medium in order to compensate for the dispersion (column 1, lines 50-59).

It would have been obvious to a person of ordinary skill in the art to further include a dispersive medium as taught by Onaka et al. in the device disclosed by Miura et al. to ensure that the wavelength of the output pulse is preserved prior to detection. One in the art would have been particularly motivated to further include such dispersion compensation since Miura et al. already disclose that a jitter measurement is obtained from the particular wavelength of the output pulse, and therefore, the accuracy of the jitter measurement would depend on the output pulse maintaining the same wavelength until it is properly detected.

Allowable Subject Matter

9. Claim 7 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

10. Claims 2, 4, and 5 also contain allowable subject matter, but these claims are currently rejected under the judicially created doctrine of obviousness-type double patenting as discussed above.

11. Examiner notes that claim 8 depends on claim 7, but although claim 7 has been indicated as having allowable subject matter, claim 8 is currently rejected under 35 U.S.C. 101 and 35 U.S.C. 112 as discussed above.

12. The following is a statement of reasons for the indication of allowable subject matter:

The prior art, including Miura et al., does not disclose or fairly suggest a method for quantifying the amount of timing jitter including the limitations and steps specifically recited in claims 2, 4, and 5 (and the claim(s) on which they depend), particularly wherein the data pulse is one of a clocked stream of data pulses and the stream of chirped pulses are synchronized with the clock of the data pulse stream. The prior art also does not disclose or fairly suggest a device including the limitations and elements specifically recited in claim 7 (and claim 6 on which claim 7 depends), particularly a second AND gate disposed to receive the output pulses and local clock pulses, wherein the AND gate is arranged so that the output pulses operate on the local clock pulses to produce regenerated pulses having a wavelength determined by the local clock pulse and independent of the wavelength of the pulse received at the second AND gate.

Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christina Y. Leung whose telephone number is 703-605-1186. The examiner can normally be reached on Monday to Friday, 6:30 to 3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 703-305-4729. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4700.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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